

Self Assessment

① Write an equation in the form $y=ab^x$ for the curve passing through the points $(1,3)(4,24)$.

② You invest \$2000 at 4.5% APR compounded monthly. How long will it take for your investment to reach \$10,000?

③ Solve for x

Ⓐ $\log_3(2x+1)=4$

Ⓑ $14e^{2x}-4=38$

① (1, 3) (4, 24)

x	y
0	1.5 $\rightarrow \cdot 2$
1	3 $\rightarrow \cdot b$
2	6 $\rightarrow \cdot b$
3	12 $\rightarrow \cdot b$
4	24 $\rightarrow \cdot b$

$$y = ab^x$$

$$\boxed{y = 1.5(2)^x}$$

$$3 \cdot b^3 = 24$$

$$\sqrt[3]{b^3} = \sqrt[3]{8}$$

$$\boxed{b = 2}$$

$$y = 2000 \left(1 + \frac{0.045}{12} \right)^{12x}$$

$$\frac{10,000}{2000} = \frac{2000 \left(1 + \frac{0.045}{12} \right)^{12x}}{2000}$$

$$5 = \left(1 + \frac{0.045}{12} \right)^{12x}$$

$$\log 5 = \log \left(1 + \frac{0.045}{12} \right) \cdot 12x$$

$$\frac{\log 5}{\log \left(1 + \frac{0.045}{12} \right)} = 12x$$

$$\text{months } \frac{429.988}{12} = \frac{12x}{12}$$

$$\boxed{35.832 \text{ years} = x}$$

$$7^x = 47$$

$$\log_7 47 = x$$

$$x = \frac{\log 47}{\log 7}$$

$$\log_3 (2x+1) = 4$$

$$3^4 = 2x+1$$

$$\begin{array}{r} 81 = 2x+1 \\ -1 \quad -1 \end{array}$$

$$80 = 2x$$

$$\boxed{x = 40}$$

$$14e^{2x} - 4 = 38$$

$+4 \quad +4$

$$14e^{2x} = 42$$

$$\frac{\quad}{14} \quad \frac{\quad}{14}$$

$$e^{2x} = 3 \longrightarrow 2x = \frac{\log 3}{\log e}$$

$$\log_e 3 = 2x$$

$$\frac{2x}{2} = \frac{1.0986}{2}$$

$$x = 0.549$$

8.5 #12

$$2^{3x-4} = 5$$

$$2^x = 5$$

$$3x-4 = \frac{\log 5}{\log 2}$$

$$x = \frac{\log 5}{\log 2}$$

$$\begin{array}{r} 3x-4 = 2.322 \\ +4 \quad +4 \end{array}$$

$$\frac{3x}{3} = \frac{6.322}{3}$$

$$x = 2.107$$

8.4 #28

$$\log_8 8\sqrt{3a^5} \rightarrow \log_8 \underline{8} \cdot \underline{3^{\frac{1}{2}}} \cdot \underline{a^{\frac{5}{2}}}$$

$$\log_8 8 + \log_8 3^{\frac{1}{2}} + \log_8 a^{\frac{5}{2}}$$

$$\log_8 8 + \frac{1}{2} \log_8 3 + \frac{5}{2} \log_8 a$$

(99)

$$5^{-3} = \frac{1}{125}$$

$$\log_5 \frac{1}{125} = -3$$

Sect. 8.1

10, 35

Sect. 8.2

#40

Sect. 8.3

#6-13 (2 you didn't do), 21, 25, 53-61 (2 you didn't do)

Sect. 8.4

#13, 19, 62, 67